

## THE RELATIVE VALUE OF THE MURPHY BUTTON AND ABSORBABLE PLATES IN INTESTINAL ANASTOMOSIS.

By ROBERT H. M. DAWBARN, M.D.,

OF NEW YORK,

PROFESSOR OF OPERATIVE SURGERY AND SURGICAL ANATOMY, NEW YORK POLYCLINIC.

NOW that the Murphy button has had a somewhat extensive trial over a wide field of abdominal surgery, it may be worth while to point out certain objections to its use in gastric and enteric work, which are not theoretical, but force themselves upon our attention practically. Certain of these objections were suggested by various surgeons before the button received a trial; and the results have, in a large measure, proved the justness of these predictions.

If we limit its field to cholecystenterostomy there can be little or no difference of opinion as to its value. Here it is a most brilliant device, wonderfully successful, and the greatest advance upon former plans.

But as to bowel-work and stomach-work, I desire to call attention to some cases reported at a recent meeting of the New York Surgical Society, November 14, 1894, by four of its members. These results were announced and discussed in open session and were published in the January issue of this journal, in the society proceedings; and, hence, are public property.

CASE I (Dr. Abbe).—This case was one in which a tumor necessitated excision of the caput coli. Entero-colostomy was performed, using the Murphy button, uniting the end of the ileum to the side of the hepatic flexure of the colon. The patient did well for a few days; then died with symptoms of obstruction. Autopsy showed

that obstruction was due to rather hard fæces blocking the opening in the button.

CASE II (Dr. Abbe).—In this patient colo-colostomy was performed, using the largest ordinary size of round button. The patient recovered, but did not pass the button. Six weeks later a second coeliotomy was done for excision of the offending loop, with tumor; whereupon it was found that the button was retained still in the colon, and on the *wrong* (proximal) side of the anastomosis. Recovery.

CASE III (Dr. Abbe).—Here colo-colostomy was performed. An unusually large button was used, selected by Dr. Murphy himself, and sent to Dr. Abbe shortly before the operation. Result, death from gangrene of gut-wall at the site of the button. Dr. Abbe was inclined to attribute this result to the weight of the button and its size, at least in part.

CASE IV.—Dr. Kammerer reported the case of a patient of his upon whom he did entero-enterostomy (small gut to small gut) end-to-end, using the button. Death after twelve weeks from peritonitis, the button not having been passed meanwhile. Autopsy showed the button retained, and on the *wrong* (proximal) side of the anastomosis; and at this new line of union the ends of the gut separated one from the other upon very slight traction. (This easy separation of the ends he thought possibly due to sepsis.)

CASE V.—Dr. Van Arsdale did a Von Hacker gastro-enterostomy upon a patient, using the round button. Death ten days later, from exhaustion, apparently due to disease. Autopsy showed anastomosis perfect; but button had been retained, and was loose in the stomach.

CASE VI.—Dr. Meyer reported a gastro-enterostomy by Wölfler's technique, and using the round button; patient recovering, and living between two and three months; then dying of acute tuberculosis of the lungs. Autopsy showed the anastomosis still excellent and uncontracted, but the button lying free in the stomach.

It will be noted that these last two cases represent opposite techniques. In the Von Hacker method the new union of bowel with the stomach is at the back of the latter organ. In the Wölfler method, the union is between bowel and front of stomach. By both plans, however, in these cases the button failed to pass, being retained in the stomach.

Whether in the stomach, or in those instances in which the

buttons were, unfortunately, retained in the bowel, it is certain that retention of this large foreign body cannot but be regarded as an element of danger ; and, indeed, it would seem a fair inference that its presence had at least something to do with exciting the peritonitis which caused the death of Dr. Kammerer's patient.

Though probably it may justly be claimed that the contents of the small intestine are always fluid or semifluid, and therefore capable of passing through the rather small lumen of the button, yet in Dr. Abbe's first case we have an instance of death from obstruction of this lumen in joining the ileum with the colon. And it is evident that in colo-colostomy with the button, this is really a risk to be recognized, for here we commonly have *fæces* much more solid than in the small gut.

In nearly all regions,—*i.e.*, gastro-enterostomy, entero-enterostomy, and colo-colostomy,—it is plain, from instances of each here reported, that the danger of permanent retention of the button is a very real one. Let it not be forgotten that these unfortunate cases represent only one meeting of one society, and a very limited use of the button in point of numbers of patients. Of course other and successful cases, perhaps as many more, were also reported.

And now, do the good results quite often obtained justify us in shutting our eyes to these perils, and continuing to use the button in this regional work ?

If we had no equally safe plan, the answer would be plain. But it seems to the writer that absorbable plates, of one or another kind, if used by those skilled in surgical technique, are almost as rapid a device, and are as certain of securing union of coaptated surfaces, after which these plates, their function being performed, become softened, digested, and disappear, instead of remaining in the stomach to cause trouble.

In the September, 1894, number of the *ANNALS* is an interesting and able article by Dr. William S. Magill, in which this question is discussed, and his conclusion is that the statistics (given by him in detail) of bowel and stomach anastomosis show that by far the best results have been obtained with such absorbable plates.

In the ANNALS OF SURGERY for February, 1893, the writer discusses Senn's bone-plates, their advantages and disadvantages, and compares them with those cut from raw vegetable tissue. The use of turnips for this purpose he alludes to as Dr. Von Baracz's plan. In this article the writer shows that he experimented upon dogs with plates of potatoes, turnips, and a number of other kinds of raw vegetable tissues in the Columbia College Physiological Laboratory during the winter of 1890-1891, and published these experiments<sup>1</sup> a year before Dr. Von Baracz's first case, which was published by him June 11, 1892. However, this is a minor point. The *method*—that of absorbable plates—is Dr. Senn's, to whom the credit of the plan is really due.

I think that, upon reflection, Dr. Senn will admit, being as candid as he is able, that the use of raw vegetable plates is somewhat of an improvement upon those made of decalcified bone, though, of course, the *principle* remains the same. This is true for the following reasons:

(1) The vegetable plates are always obtainable at a minute's notice.

(2) They cost nothing.

(3) They are easily made by anybody with a penknife.

(4) They can without difficulty be made to have a very long opening,—often a desideratum, to guard against stenosis from late contraction. Indeed, with sweet-potatoes, it is easy to cut a plate that shall have a four-inch opening.

(5) They are softened, absorbed, and hence gotten out of the way sooner than bone-plates, which is a great advantage over the bone-plates. Indeed, the latter plates, taking a week or so to absorb, have in one or two instances caused death by sliding on each other, finally, after a number of days, enough to obstruct the opening.

(6) As Magill says, "they are more pliable than bone, easier to preserve, and better brought together in making the anastomosis, slipping much less."

<sup>1</sup> New York Medical Record, June 27, 1891.

Though absorbed in from a day to two or three days, depending on what portion of the alimentary canal they occupy, neither in my own experiments nor in any reported cases have they been absorbed too soon. The most rigid test of this point is, of course, a gastro-enterostomy; and Von Baracz's repeatedly published successes with such plates, in this operation, speak for themselves.

Such plates are best made either of sweet-potato or white potato. Any of the kinds of turnips, while fairly good for the purpose, are comparatively brittle; they cannot be bent so far without snapping; also, being of not quite such firm substance, turnip is not so rigid as potato. The latter tissue, if it has been immersed in warm water for half an hour or so, becomes almost like wood in hardness, and yet does not appreciably swell nor change its shape. I attribute this increased rigidity to absorption of water by the starch granules and their consequent pressure against one another.

Dr. Magill is a little in error regarding the effect of carbolic acid solutions upon such plates, either of potato or turnip, as the acid tends to soften (not harden) them, and should hence not be used. Whether upon prolonged soaking for days in carbolic solution the effect is different I cannot say.

By permission of Dr. G. L. Carden, of Cumberland, Md., I beg to record here two rather recent cases in which white potato plates were used by him, I having a year previously demonstrated to him the technique while he was in New York City.

CASE I.—A male adult, suffering with chronic relapsing appendicitis. Operation, October 27, 1892, showed necrotic cæcum and ulceration at ileo-cæcal junction. Three inches of both large and small gut were removed. It was now necessary to perform ileocolostomy, and this was done by the lateral method, using white potato plates. Result, recovery. In a second letter, received November 10, 1894, Dr. Carden writes, "This patient is still well, and doing manual labor in Ohio."

CASE II.—An old man, "nearly sixty," was operated upon by Dr. Carden, March 8, 1894. The cause of operation was the same as in the preceding instance, chronic relapsing appendicitis. The

conditions found also closely resembled the former case. White potato plates were again used. Result, death, in thirty-eight hours, from sepsis due to rupture of an intestine previous to the operation. An autopsy showed that union at the anastomosis was firm, and no leakage whatever had occurred.

A third recent successful case by this device—this time with turnip-plates—was that of Dr. Von Baracz, an ileo-colostomy in a young man nineteen years of age.

In comparison with suturing pure and simple, to which, notwithstanding its frightful mortality, surgeons in general still cling for some inscrutable reason, almost any plate device is preferable. Dr. Abbe's plan of suturing, described a few years ago by him, in which three distinct rows of stitches are placed about the new opening, requires nearly *thirty inches* of sewing. To do this rapidly and neatly within a moderate length of time is possible for him, but not for less gifted men. A plate operation that would be equally secure can be completed by the average surgeon in half the time. And we must never forget that speed—breathless speed—is a tremendous factor in success in peritoneal work. An exposure of half an hour means a much greater resultant mortality than one of fifteen minutes or less. This, which seems to the writer a truism, is strangely enough contested by certain surgeons here in New York, as will be seen by reference to the discussion on this topic,<sup>2</sup> these gentlemen contending that a quarter of an hour more or less with the belly opened does not matter.

Upon this one point, as it seems to me, depends the whole question whether, in stomach and bowel work, to use simple suturing about the new opening, or whether, instead, to save precious time, some other device, of which absorbable plates seem the best.

Any surgeon can, with "dateless Olympian leisure," make a tight and eminently satisfactory job of a gastro-enterostomy, or an entero-enterostomy, by suturing alone; and can also subsequently sign a death certificate.

<sup>1</sup> Centralblatt für Chirurgie, July 7, 1894.

<sup>2</sup> ANNALS OF SURGERY, February, 1893.

In conclusion, the writer begs to submit, as being well worth a second perusal, the following statistical remarks, from Dr. Magill's carefully-prepared article, already quoted. They are quoted with especial reference to gastro-enterostomy alone, simply because in this operation is found the severest test of absorbable plates. And, as the writer, Dr. Von Baracz, Dr. Heigl, and others have shown, vegetable plates are quite as safe as bone ones elsewhere in intestinal work also.

"Of sixty-one gastro-enterostomies, only *one death* has occurred from *insufficient approximation*. This fault was during the experimental stage, before perfection of the details of the method. The cause of the accident was immediately recognized and corrected. Fifty-six operations since the first of January, 1889, where moist plates were used, have not once revealed a fault of approximation.

"No method of *suture* ever gave such a remarkable result. Billroth's statistics of gastro-enterostomy, published in 1891, gave 28 operations, 14 deaths; mortality 50 per cent.—more than double that of Senn's method in the hands of thirty-four *different operators*, many of them trying the approximation for the first time.

"The statistics of Von Hacker, published in 1890, correspond closely to Billroth's,—21 cases; 8 operated by Wölfler's method resulted in 4 deaths, mortality 50 per cent.; and 13 operations by Von Hacker's method resulted in 6 deaths, mortality 47 per cent."

As against these gastro-enterostomies by simple suturing alone stands the table of results by absorbable plates: 61 gastro-enterostomies, 14 deaths; mortality, 22.95 per cent., which is less than half that by the former method.